

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 05 JAN 2005



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Applicant's or agent's file reference GIP19PT03		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/51056	International filing date (day/month/year) 18.12.2003	Priority date (day/month/year) 09.01.2003	
International Patent Classification (IPC) or both national classification and IPC C08F2/32			
Applicant LAMBERTI SPA et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

Date of submission of the demand  03.08.2004	Date of completion of this report  04.01.2005
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Boletti, C  Telephone No. +49 89 2399-8527  

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/51056**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-15 as originally filed

**Claims, Numbers**

1-13 received on 08.12.2004 with letter of 07.12.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/51056**

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-13
	No: Claims	
Inventive step (IS)	Yes: Claims	1-13
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP 03/51056

None of the prior art documents cited in the international search report discloses nor suggests the subject-matter of the claims 1 to 13.

Document US 6197287 (D1) discloses an inverse emulsion comprising 20 to 60 wt.% of an anionic polyelectrolyte obtained by inverse emulsion polymerisation of anionic acrylic monomers one of which containing a strongly acidic functional group.

The emulsion of D1 is useful as thickener in cosmetic formulation which are stable over time.

The emulsion quoted in D1 therein does not contain a hydrophobic acrylic monomer. The presence of a hydrophobic acrylic monomer allows the present inverse emulsion to be more stable than the inverse emulsion of D1. This unexpected effect has been demonstrated from the applicant by means of a comparative test.

EP 0172723 concerns a water soluble copolymer of two or more monomers and at least 0.5% of a monomer carrying a pendant hydrophobic group. The copolymer is used as flocculant. This citation does neither refer to an inverse emulsion nor to an anionic acrylic polymer.

EP 0562344 describes a copolymer containing 20-90% of 2-acrylamido-2-methylpropane sulfonic acid and 0. 1-10% styrene. The polymerisation occurs in aqueous phase. The polymer are useful as protective colloids in micro capsules. This citation is not concerned with an inverse emulsion.

## CLAIMS

1. (Stable) inverse emulsion wherein the weight ratio between the aqueous phase and the oil phase is from 4:1 to 2:1 and containing from 20 to 70% by weight of an anionic acrylic polymer obtained by inverse emulsion polymerisation of one or more anionic acrylic monomers, at least one of which containing a strongly acidic functional group, dissolved in the aqueous phase, and at least a hydrophobic acrylic monomer dissolved in the oil phase before the mixing of the two phases, the percentage of the hydrophobic acrylic monomers on the total weight of the anionic acrylic monomers being from 0.1% to 5% by weight.
2. (Stable) inverse emulsion according to claim 1., wherein the percentage of the hydrophobic acrylic monomers on the total weight of the anionic acrylic monomers is from 0.5 to 1.5% by weight.
3. (Stable) inverse emulsion according to claim 1. or 2., wherein the anionic acrylic monomer is 2-acrylamido-2-methylpropanesulfonic acid and/or its sodium salt.
4. (Stable) inverse emulsion according to claim 3., wherein the hydrophobic acrylic monomer are esters of acrylic or methacrylic acid with C<sub>4</sub>-C<sub>20</sub> linear or branched monofunctional alcohols.
5. (Stable) inverse emulsion according to claim 4., wherein the hydrophobic acrylic monomer is stearyl methacrylate or n-butyl methacrylate.
6. Procedure for the preparation of an inverse emulsion characterised by:
  - a. adding to a mixture of water and one or more anionic acrylic monomer, at least one of which containing a strongly acidic functional group, an aqueous solution of an alkali to regulate the pH between 4 and 10, a cross-linking agent and an initiator of radical polymerisation, maintaining the temperature between 0° and 5°C;
  - b. preparing an oil phase containing from 0.1 to 10% by weight of at least one hydrophobic acrylic monomer and one or more water-in-oil emulsifiers;
  - c. introducing the mixture obtained in a. into the oil phase prepared in b. and emulsifying the two phases by vigorous stirring;

- d. initiating the polymerisation and completing it maintaining the temperature between 55° and 95°C undervigorous stirring;
- e. cooling the reaction mixture to 35-45°C and adding an oil-in-water emulsifier.
- 5 7. Procedure for the preparation of an inverse emulsion according to claim 6., wherein the anionic acrylic monomer containing a strongly acidic functional group is 2-acrylamido-2-methylpropanesulfonic acid and/or its sodium salt.
8. Procedure for the preparation of an inverse emulsion according to claim 7., wherein the hydrophobic acrylic monomers are esters of acrylic or
- 10 methacrylic acid with C<sub>4</sub>-C<sub>20</sub> linear or branched monofunctional alcohols.
9. Procedure for the preparation of an inverse emulsion according to claim 8., wherein the hydrophobic acrylic monomers are stearyl methacrylate or n-butyl acrylate.
10. Procedure for the preparation of an inverse emulsion according to claim
- 15 9., wherein the anionic acrylic monomers dissolved in the aqueous phase are a mixture of at least one monomer containing a strongly acidic functional group (AF) and one or more monomers containing a carboxylic group (AC), the weight ratio between AF and AC being comprised from 4:1 and 1:1.
- 20 11. Procedure for the preparation of an inverse emulsion according to claim 10., wherein the anionic acrylic monomers containing a carboxylic group are chosen among acrylic acid and methacrylic acid.
12. Procedure for the preparation of an inverse emulsion according to any of the claims from 6. to 11., wherein the anionic acrylic polymer obtained by
- 25 inverse emulsion polymerisation is cross-linked with from 0.01% to 1 % by weight on the total weight of the monomers of a compound containing two or more ethylenic groups.
13. Procedure for the preparation of an inverse emulsion according to claim
- 30 12., wherein the compound containing two or more ethylenic groups is methylene-bis-acrylamide.